

REMARKS

This amendment is in response to the Office Action dated 9/3/03. Entry of this Amendment and reconsideration of this application are respectfully requested.

Amendments to the Specification

The Examiner objected to the invention's TITLE as non-descriptive. The specification has been amended as indicated above to include a new title:

PRINTED CIRCUIT BOARD TEST JACK ADAPTED FOR INTERFACE WITH AN EXTERNAL TEST PROBE

which the applicants believe is clearly indicative of the invention to which the claims are directed.

The Examiner also objected to the application's ABSTRACT, and noted that the ABSTRACT contains more than 150 words.

The applicants count 139 words in the original ABSTRACT. Nevertheless, the ABSTRACT has been amended as indicated above to reduce the number of words (there are now 106), and to otherwise comply with the Abstract language guidelines presented by the Examiner.

Claim Rejections under 35 USC § 102

Patent to Yagi

Claims 1-17 were rejected as anticipated by a patent to Yagi et al. (hereinafter "Yagi"). In response, claims 1, 12 and 17 have been amended to better clarify their distinctions with respect to Yagi, as well as the other cited art.

Yagi fails to disclose the "through-hole" and "signal

conductor" elements of the amended claim 1. Claim 1 specifically requires a through-hole in the PCB. It also requires that the test jack's "signal conductor" include "a single conductive through-hole pin for insertion into said through-hole". Yagi has no corresponding structures. The Examiner indicates that Yagi's FIG. 3 anticipates claim 1. This indication is incorrect. As described at column 5, lines 28-50, FIG. 3 depicts a plug connector component engaged with a receptacle connector component. However, FIG. 3 does not show a through-hole pin, nor a through-hole into which the pin can be inserted. Nothing in Yagi is shown or described as a through-hole or a through-hole pin. The unlabeled and unmentioned protrusions shown in FIG. 3 are believed to be merely portions of the mating connectors - they are clearly not through-hole pins. Lacking a through-hole pin or a through-hole, Yagi cannot and does not anticipate claim 1. The amended claim 1 is thus allowable over Yagi.

#### Claims 2-11

The amended claim 1 is the parent of each of claims 2-11, which are therefore allowable along with claim 1.

In addition, these claims recite limitations that provide an independent basis for their allowability. Some example limitations are noted below:

- Claim 2 requires that the body portion be cylindrical. With reference to FIGs. 4 and 5, the "body" of Yagi's connector is a long rectangular slot - it is not cylindrical.
- Claims 4 and 5 requires the jack to have three or four surface mount conductors, arranged either 120° or 90° apart. The only similar structure in Yagi is limited to two surface mount conductors arranged 180° apart.
- Claims 6-7 require the jack to have a ring-shaped surface mount conductor. Yagi discloses no corresponding structure.

- Claims 8-9 recite specific PCB limitations. Yagi discloses no corresponding PCB details.
- Claim 11 requires the test jack to provide a signal connection between an external test probe and the through-hole pin, and a ground connection between the external test probe and a surface mount conductor. Yagi discloses nothing remotely resembling this structure. Yagi teaches nothing about "signal" and "ground" connections, nothing about external test probes, and nothing about a through-hole pin.

Because Yagi fails to disclose the limitations recited in claims 2, 4-9 and 11 as noted above, Yagi cannot and does not anticipate these claims - which are therefore allowable over Yagi on these independent bases.

#### Claim 12

Claim 12 is an independent claim directed to a printed-circuit board (PCB) test jack, which has been amended in the same manner as claim 1. As amended, claim 12 is similar in scope to claim 1, except that it requires that the jack specifically provide signal and ground connections to an external test probe, with a surface mount conductor providing the ground connection, and the through-hole pin providing the signal connection.

As with the amended claim 1, Yagi fails to disclose essential elements of the amended claim 12, and the arguments made above in relation to claim 1 are applicable here as well. To reiterate:

Yagi fails to disclose the "through-hole" and "signal conductor" elements of the amended claim 12. Claim 12 specifically requires a PCB through-hole, and a single conductive through-hole pin for insertion into the through-hole. Nothing in Yagi is shown or described as a through-hole or a through-hole pin. Lacking a through-hole pin or a through-hole, Yagi cannot and does not anticipate claim 1. The amended claim 1 is thus

allowable over Yagi.

Lacking disclosure of these essential elements of the amended claim 12, Yagi cannot and does not anticipate claim 12, which is thus allowable over Yagi.

Claims 13-16

The amended claim 12 is the parent of each of claims 13-16, which are therefore allowable along with claim 12.

In addition, several of these claims recite limitations that provide an independent basis for their allowability. These are noted below:

- Claims 14-15 recite specific PCB limitations. Yagi discloses no corresponding PCB details. Thus, Yagi does not anticipate these claims, which are therefore allowable over Yagi on these independent bases.

Claim 17

Claim 17 is canceled.

Patent to Cole

Claims 1-3 and 8-10 were rejected as anticipated by a patent to Cole et al. (hereinafter "Cole"). As noted above, claims 1, 12 and 17 have been amended to better clarify their distinctions with respect to the cited art.

The patent to Cole resembles claim 1 in no aspects whatsoever. Cole discloses a "probe adapter", which enables the pins of an electrical device to be probed by a test probe. It does this using conductive runs 14 that run from the electrical device to a plurality of "contacts 20" at the edge of a substrate.

However, "contacts 20" are merely metal areas near the edge of the substrate that "have a pitch geometry...compatible with

hand-held measurement test instrument probes..." (col. 4, lines 6-8). Cole's contacts have no "body portion", no means of mechanical support for a test probe, no surface-mount conductor, no surface pads, no through-hole pin, and no through-hole - all of which are required by claim 1.

Perhaps the Examiner thought that "square pins 30" and/or "square connectors 40" (see col. 4, lines 1-2) comprised "test jacks". They do not. These merely are used to enable connections between adapter 10 and a PCB 34. They do not correspond to the PCB test jack of claim 1 in any way - they have no surface-mount conductor and no through-hole pin per claim 1.

In short, it is not clear why Cole is cited at all, and especially why Cole is considered to be an anticipatory reference. The Examiner has made no citations to the text or figures of Cole to indicate how it is that Cole anticipates claim 1, though such citations are required.

Lacking disclosure of all of the above-noted elements of the amended claim 1, Cole cannot and does not anticipate claim 1 - which is therefore allowable over Cole.

#### Claims 2-3 and 8-10

The amended claim 1 is the parent of each of claims 2-3 and 8-10, which are therefore allowable along with claim 1.

In addition, several of these claims recite limitations that provide an independent basis for their allowability. Some example limitations are noted below:

- Claim 2 requires that the body portion be cylindrical. Cole discloses no test jacks, and no cylindrical body portions.
- Claim 3 requires a cylindrical body portion and two surface mount conductors arrayed 180° apart. Cole discloses no test

jacks, no cylindrical body portions, and no surface mount conductors.

- Claims 8-9 recite specific PCB limitations. Cole discloses no corresponding PCB details.

- Claim 10 recites a PCB with a plurality of test jacks with corresponding surface pads and through-holes. Cole discloses no test jacks with corresponding surface pads and through-holes.

Because Cole fails to disclose the limitations recited in claims 2-3 and 8-10 as noted above, Cole cannot and does not anticipate these claims - which are therefore allowable on these independent bases.

The applicants therefore assert that each of claims 1-3 and 8-10 as presently amended is allowable over Cole.

#### IBM Bulletin

Claims 1-3 and 8-10 were rejected as anticipated by a IBM Technical Disclosure Bulletin by Chrzanowski et al. (hereinafter "Chrzanowski"). As noted above, claims 1, 12 and 17 have been amended to better clarify their distinctions with respect to the cited art.

Chrzanowski's device includes an upper "connector" portion having a bifurcated spring yoke designed to receive a card edge or integrated circuit pin (per U.S. Patent No. 3,915,537 cited in the Chrzanowski bulletin), and a lower "stem" portion having horizontal side portions 11,12 and a center tab 13. The horizontal side portions and center tab are all one continuous piece of conductive metal - i.e., the device can accommodate only one signal, which is routed to both the horizontal side portions and the center tab.

Chrzanowski fails to disclose a number of elements of the amended claim 1, including:

- at least one surface pad on the PCB's top surface. Chrzanowski discloses horizontal side portions 11,12, but there are no corresponding surface pads for them to attach to.

- at least one surface mount conductor connected to the body portion and arrayed for attaching to corresponding surface pads on the PCB's top surface. As noted above, Chrzanowski discloses horizontal side portions 11,12, but there are no corresponding surface pads for them to attach to. As is clearly seen in the Chrzanowski bulletin, the horizontal side portions merely contact the sides of hole H, as does center tab 13. Having the ability to convey only one signal, there is no need for any surface pads - and none are present.

- a signal conductor electrically isolated from the at least one surface mount conductor and connected to the body portion for providing a signal connection to the external test probe, comprising a single conductive through-hole pin for insertion through the PCB through-hole. Chrzanowski disclose just a single conductor. Center tab 13 and horizontal side portions 11,12 are all one common conductor. Therefore, it is impossible for Chrzanowski to disclose "a signal conductor electrically isolated from the at least one surface mount conductor" when there is but one conductor.

Lacking disclosure of the above-noted elements of the amended claim 1, Chrzanowski cannot and does not anticipate claim 1 - which is therefore allowable over Chrzanowski.

#### Claims 2-3 and 8-10

The amended claim 1 is the parent of each of claims 2-3 and 8-10, which are therefore allowable along with claim 1.

In addition, several of these claims recite limitations that

provide an independent basis for their allowability. Some example limitations are noted below:

- Claim 2 requires that the body portion be cylindrical. Chrzanowski discloses no test jacks, and no cylindrical body portions. Rather, he discloses a bifurcated spring yoke.
- Claim 3 requires a cylindrical body portion and two surface mount conductors arrayed 180° apart. Chrzanowski discloses no test jacks and no cylindrical body portions.
- Claims 8-9 recite specific PCB limitations. Chrzanowski discloses no corresponding PCB details.
- Claim 10 recites a PCB with a plurality of test jacks with corresponding surface pads and through-holes. Chrzanowski discloses no test jacks and no corresponding surface pads.

Because Chrzanowski fails to disclose the limitations recited in claims 2-3 and 8-10 as noted above, Chrzanowski cannot and does not anticipate these claims - which are therefore allowable on these independent bases.

Therefore, each of claims 1-3 and 8-10 as presently amended is allowable over Chrzanowski.

Patent to Martucci et al.

Claims 1-3 and 8-10 were rejected as anticipated by a patent to Martucci et al. (hereinafter "Martucci"). As noted above, claims 1, 12 and 17 have been amended to better clarify their distinctions with respect to the cited art.

Martucci fails to disclose several elements of the amended claim 1, including:

- a body portion adapted for mounting on the top surface of a PCB and to provide mechanical support and an electrical



interface to an external test probe inserted into the body portion. Martucci fails to disclose several aspects of this element. Martucci's assembly is adapted for mounting to the bottom surface of his PCB 12 (see FIG. 6) - not the top surface as required by claim 1. Further, his assembly does not provide any mechanical support as required by claim 1: Martucci's terminal pin or component lead 52 are inserted into the top surface of PCB 12, but his socket assembly 10 is located on the bottom surface - as such, there is no structure protruding above the top surface of PCB 12 with which the required mechanical support can be provided.

- at least one surface mount conductor connected to the body portion and arrayed for attaching to corresponding surface pads on the PCB's top surface. It might be said that Martucci's wing portions 26 correspond to a surface mount conductor. However, as seen in FIG. 6, wing portions 26 are soldered to the bottom surface of PCB 12 - not the top surface as required by claim 1.

- a signal conductor electrically isolated from the at least one surface mount conductor and connected to the body portion for providing a signal connection to the external test probe, comprising a single conductive through-hole pin for insertion into the PCB's through-hole. This element requires the existence of two conductors. Martucci discloses only one conductor - his barrel portion 24, socket 20, and wings 26 are all electrically continuous, with no part of his assembly electrically isolated from any other part. His "surface mount conductor" - i.e., wings 26 - is electrically common with his "signal conductor" - i.e., socket 20.

- Martucci also fails to disclose the "single conductive through-hole pin" required by claim 1. He provides a circular socket in hole 14, but a socket is not a pin - in fact, it is the complement of a pin: a socket is designed to receive a pin.

To summarize, Martucci fails to disclose the following elements of the amended claim 1:

- a body portion adapted for mounting on the top surface of a PCB.

- a body portion adapted to provide mechanical support to an external test probe inserted into the body portion.

- at least one surface mount conductor connected to the body portion and arrayed for attaching to corresponding surface pads on the PCB's top surface.

- a signal conductor electrically isolated from the at least one surface mount conductor and connected to the body portion for providing a signal connection to the external test probe.

- a signal conductor comprising a single conductive through-hole pin for insertion into a through-hole in the PCB.

Lacking disclosure of all of these essential elements of the amended claim 1, Martucci cannot and does not anticipate claim 1 - which is therefore allowable over Martucci.

#### Claims 2-3 and 8-10

The amended claim 1 is the parent of each of claims 2-3 and 8-10, which are therefore allowable along with claim 1.

In addition, several of these claims recite limitations that provide an independent basis for their allowability. These are noted below:

- Claims 8-9 recite specific PCB limitations. Martucci discloses no corresponding PCB details.

Because Martucci fails to disclose the limitations recited in claims 8-9 as noted above, Martucci cannot and does not anticipate these claims - which are therefore allowable on these independent bases.

The applicants therefore assert that each of claims 1-3 and 8-10 as presently amended is allowable over Martucci.


Claim Rejections under 35 USC § 103

Claims 4-5 were rejected as obvious in view of Martucci.

The amended claim 1 is the parent of each of claims 4-5, which are therefore allowable along with claim 1.

Each of the Examiner's objections and rejections has been addressed. All of the claims presently in the application are believed to be patentably distinct with respect to the cited art and to otherwise be in proper form for allowance. A Notice of Allowance is respectfully requested.

Respectfully submitted,

  
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